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Guidance for product category rule development: process, outcome, and next steps

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Abstract
Purpose The development of product category rules (PCRs) is inconsistent among the program operators using ISO 14025 as the basis. Furthermore, the existence of several other product claim standards and specifications that require analogous rules for making product claims has the potential to reduce any consistency in PCRs present in the ISO 14025 domain and result in unnecessary duplication of PCRs. These inconsistencies and duplications can be attributed to (a) insufficient specificity in related standards, (b) the presence of several standards and specifications, (c) lack of/limited coordination among program operators, and (d) lack of a single global database for PCRs. As a result, current PCR development threatens the legitimacy of life cycle assessment-based product claims.
Process Through discussions over the past few years, in multistakeholder organizations, it has become clear that more guidance on the development of PCRs is necessary. In response to this need, the Product Category Rule Guidance Development Initiative (www.pcrguidance.org) was launched as an independent multistakeholder effort in early 2012. The premise for the Initiative was that the Guidance would be created by a voluntary group of international stakeholders that would share ownership of the outputs.
Outcome The Guidance is now published, along with supplementary materials, on the Initiative website. The guidance document specifies requirements, recommendations, and options on (1) steps to be taken before PCR creation; (2) elements of a PCR; (3) review, publication, and use of PCRs; and (4) best practices for PCR development and management. Supplementary materials include a PCR template, a conformity assessment form, and a list of program operators from around the world.
Conclusions The Guidance will help reduce cost and time to develop a PCR by supporting the adaptation of an existing PCR or by building on elements from existing PCRs. It will help reduce confusion and frustration when creating PCRs that are based on one or more standards and programs. Overall, the Guidance is a robust handbook for consistency and clarity in the development of PCRs.

Keywords Alignment · Environmental product declarations · Product category rules · Product claims · Product footprints

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1 Introduction

Life cycle assessment (LCA)-based product claims are a market application of life cycle assessment of growing use in regions including Europe, Asia, and North America (Ingwersen and Stevenson 2012). These claims may be in the form of environmental product declarations (EPD), product carbon footprints (PCF), and product environmental footprints (PEF). All such claims use life cycle assessment to quantify and report one or more environmental impacts for a product, and may also provide additional information beyond the scope of typical LCA results. Several standards and guidance documents have emerged in the last 5–10 years for making LCA-based product claims, including ISO 14025 (ISO 2006a), Japanese Technical Specification: TS Q 0010

(JISC 2009), ISO 21930 (ISO 21930 2007), PAS 2050 (BSI 2011), BPX X30-323 (AFNOR/ADEME 2011), the GHG Protocol Product Life Cycle Accounting and Reporting Standard (GHG Protocol 2011), and the Product Environ- mental Footprint Guide (EC 2013). Each of these standards requires some form of a product category rule (PCR) in order to publish a claim that may be used for the purpose of comparison. However, it has been acknowledged in various expert fora that these standards[1] do not provide sufficient guidance to support the creation of consistent PCRs. Apart from a European standard for PCRs in the construction sector CEN 15084 (CEN 2012), and some recent but limited efforts among program operators to sign memorandum of understanding agreements (Del Borghi 2012), there has also been an insufficient level of coordination among program operators to develop and align PCRs. Additionally, the lack of a global PCR database with participation from all program operators who create PCRs has exacerbated the situation because existing PCRs are often not easily discovered. This has resulted in a sporadic and uncoordinated process of PCR development that is inconsistent and sometimes unnecessarily duplicative. This, apart from increasing cost and time to develop PCRs, jeopardizes the legitimacy of product environmental claims. The demand for PCRs is projected to grow substantially in the coming years, fueled by the demand for science-based, comparable, and verifiable information on the environmental performance of goods and services that are to be used in business-to-business and business-to-consumer communication (Ernst and Young 2013). For example, in markets like North America, the demand for LCA-based claims is just beginning to grow, and this has resulted in the tripling of the number of program operators (Subramanian et al. 2012). Therefore, PCRs are expected to further increase in these markets and are likely to continue to diverge. The development of PCRs that intentionally or unintentionally prevent robust and comparable claims, threatens the legitimacy of using LCA-based claims in the marketplace.

Formal discussions regarding the potential problems surrounding PCR inconsistency began at a side event of the Product Carbon Footprint World forum called the PCR Roundtable, spearheaded by Mark Goedkoop and Rasmus Priess (Goedkoop and East 2011). The concept of PCR alignment was born out of this group's discussions. In 2010, the PCR Roundtable initiated a taskforce to further investigate how alignment could be achieved. Early efforts of the taskforce included a comparison of PCRs (Subramanian et al. 2012) and of program instructions (Schenck 2011), but the taskforce ultimately determined by September of 2011 that two things would greatly facilitate PCR alignment: (1) guidance on PCR development and (2) a global PCR repository. These needs and others were reinforced during an open discussion of 120 LCA experts and other stakeholders held in conjunction with the LCA XI Conference (Ingwersen et al. 2012). Various publication/standardization bodies were considered as options to develop the guidance. Specifically, serious consideration was given to the forthcoming revision of ISO 14025. However, the immediate need emphasized by stakeholders and the necessity for a bridge between several product claim standards called for swift action. The American Center for LCA (ACLCA) agreed to take the lead on developing the PCR Guidance (henceforth "Guidance") and the ACLCA PCR Committee[2] elected the authors to lead the effort.

2 Process

To build on the wealth of knowledge and experience among programs operators and PCR experts in Europe and Asia and to engage a wider range of stakeholders from around the world to make the guidance document applicable and acceptable, the authors founded the Product Category Rule Guidance Development Initiative in early 2012. The two guiding principles for the Initiative were determined to be (1) aim towards alignment of PCRs and (2) move forward in a spirit of open and transparent collaboration.

The members of the ALCLA PCR Committee supported the authors in developing a draft outline for the Guidance. Solicitation of interest to participate in the Initiative was posted via announcements on various websites, broadcast emails, and listserv messages in early 2012. Participants were invited to volunteer as drafters or internal reviewers. This invitation to participate has remained open, as it was determined that the Guidance be a living document so as to remain continually useful to the product claims community. The participants represented over 40 organizations from 13 countries and regions. A 12-member steering committee was selected from among the most experienced members in the field of product claims to help guide the Initiative. Prior to the commencement of drafting, introductory webinars were given to all participants, the draft outline was revised and refined, and a set of operating procedures was established and agreed upon. All work items, meeting notes, and reference materials were stored "in the cloud" and accessible to all participants. Drafting began with a steady group of 14 drafters who met bimonthly, with chapter editors coordinating the work on their respective chapters. The first draft was completed by early October 2012 and shared in a special session at the LCA XII conference (Subramanian and Ingwersen 2012). An internal review of the first draft commenced in mid-October. Approximately 350 comments were received during the

[1] Except PEF guide, which was developed in coordination with the PCR Guidance Development Initiative and published just prior (April 2013) to the publication of the guidance.

[2] http://www.lcacenter.org/product-category-rule.aspx

internal review period. A small committee was formed to create the second draft by addressing the comments and revising the document. The Guidance underwent public consultation from mid-January 2013 to mid-March 2013. The Canadian Standards Association, a participant of the initiative with extensive experience in standards development, volunteered to host the public consultation and collect comments though their website. Notice of the public consultation was broadcast through emails and circulated in various product sustainability fora. Over 140 comments were received from 15 organizations during the public consultation period. These comments were addressed and the finalized Guidance (version 1.0) was circulated for approval to all participants and their organizations.

3 Outcome

The Guidance is now published and available for free download via the Initiative's website (www.pcrguidance.org). There are several critical aspects of this Initiative that made it enticing for participants to contribute and create this Guidance: (1) all participants share ownership of the outputs of this initiative, (2) all activities of the Initiative are transparent, (3) all decisions are consensus-based, (4) participation was at no cost, and (5) the Initiative is advised by an able and experienced steering committee.

The Guidance is published as a package which contains the: (1) guidance document, (2) the PCR template in MS word format, (3) a conformity assessment form, and (4) supplemental information available on the Initiative website. The package is designed to be a comprehensive resource for developing PCRs that developers can use to supplement product standards, program instructions, and product category-specific information. The guidance document contains an introductory chapter and five core chapters that describe the process of PCR development, beginning with the planning phase and continuing through the PCR use phase. A seventh chapter expounds on best practices for PCR management. In addition to the PCR template (Appendix I), three appendices are included in the guidance document. Table 1 provides a snapshot of the contents of the guidance document.

Fitting with the purpose of the Guidance to bridge standards, much of the content of requirements and recommendations were distilled from existing product standards (e.g., ISO 14025), program instructions (e.g., International EPD System general program instructions), or related guidance documents (e.g., The Product Environmental Footprint Guide). The Guidance uses three levels of specifications: requirements (shall), recommendations (should), and options (may). Since the Guidance is publically available, we will not exhaustively describe each section here, but rather provide a broad overview, and do not make distinctions in this summary between the levels of specification.

Table 1 Table of contents of the Guidance

Following an introductory chapter describing the context for the creation of the Guidance, chapter 2 provides instructions on steps that precede PCR development. Before deciding, it is important to first determine whether a PCR is necessary. PCRs are not necessary to perform life cycle assessments that are used within an organization or when life cycle assessments are published as an ISO 14044 compliant report. PCRs are necessary for all public declarations based on LCA-based product standards, especially in scenarios when the claims may be used for comparison by the user. Other potential benefits of developing PCRs beyond product declarations or labels include product improvement and product category benchmarking. Once an interested party decides to pursue the development of a PCR, the Guidance describes a systematic process for PCR development and identifies the actors and their responsibilities in the process. Program operators are not always required in all product claim standards (e.g., PAS 2050) but were explicitly included as necessary actors in the Guidance, while still allowing some flexibility in the types of organizations that can serve the program operator

role. The PCR committee, which is responsible for drafting the PCRs, should be composed of an assortment of participants that includes LCA experts, representation of relevant industry members, and interested third parties; these requirements are mirrored for the PCR review committee. The program operator should facilitate public consultation of the PCR from the moment of initial statement of intent to develop a PCR through the lifetime of the PCR. The Guidance provides detailed recommendations for defining the product category as well as use of international product classification schemes and technical specifications for identifying and classifying products in the product category. Before any PCR development work begins, a thorough search should be conducted to see if any PCRs exist for identical or overlapping product categories. If PCRs already exist, the Guidance provides recommendations on how to proceed further: using it "as-is", adapting it, revising it or working with the program operator to create a unified PCR. A PCR should be created based on a suitable underlying LCA study or such a study should be initiated.

The PCR template that accompanies the Guidance is organized into several sections: background information, review information, goal and scope, life cycle inventory instructions, life cycle impact assessment instructions, directions on presentation and interpretation of LCA results, instructions for providing additional information, glossary and references, and various annexes that provide additional documentation. The template provides a designated space for all the required and recommended elements of PCRs. Chapter 3 provides details for each of these elements. It must be noted that although a PCR specifies rules for an LCA that is compliant with ISO 14044 (ISO 2006b), there are slight differences between an LCA for a claim based on a PCR and an LCA for a third-party report as specified in 14044. Specifically, the performance of an LCA using a PCR is not iterative, unlike a traditional LCA. The steps taken to complete the LCA—such as the goal and scope definition, identification of inventory sources, and selection of impact categories—are predefined in the PCR, and therefore do not need to be articulated in the claim.

Chapters 4 and 5 cover PCR review and publication. Before a PCR is published, it must be approved by a formal review committee and be open for public comments. The review committee must address all comments received and the program operator must make their responses freely available to the public. The program operator must establish an appeals mechanism for handling procedural complaints during the PCR development process. The program operator is responsible for publishing PCRs and making them readily discoverable and easily accessible in one or more languages that are acceptable to the region of application. During the active life of a PCR, program operators may make limited updates to the PCR without using the established PCR committee and review panel, such as incorporating changes in program operator rules, updates to overarching standards, and updates to life cycle impact assessment methodologies. Any proposed updates should be subject to public comments before approval.

The drafters of the Guidance agreed early on to constrain the scope of the Guidance to PCRs, and only elaborate on claims as necessary. However, since an essential function of PCRs is to make claims that can be compared, a list of elements in a claim that should be identical and equivalent to permit comparability were included in chapter 6. Elements that must be identical are the product category definition and description, functional unit, system boundary, criteria for inclusion or exclusion of flows, data quality requirements, calculation procedures (transformation of data collected into flows), allocation rules, impact categories and LCIA methodologies, predetermined parameters for inventory indicators, and LCIA characterization factors. Other elements that must be equivalent include methods of data collection, data sources, units, additional information requirements, and the declaration of materials and substances that affect human health and the environment.

Chapter 7 includes a number of best practice recommendations regarding the content of PCRs, the process of PCR development, and a description of additional efforts that will greatly enhance the utility of PCRs. Some aspects of this chapter are visionary solutions to unresolved issues in this field. Acknowledging that products will evolve over time and be customized to different markets, it is important to specify how extensive variation within a product category can be, while still being encompassed in the same PCR. The language of the PCR should be concise, clear, and as prescriptive as possible to ensure the PCR is interpreted in the same manner. Since many LCA methodologies are still in active development, it is important to make their limitations clear; if it is judged as impossible to address all impacts, then this should be stated as well. A recommendation for the use of both fixed and flexible content in PCRs comes from the need to make a single PCR flexible enough to be operational for multiple standards and different geographies, while at the same time assuring comparable claims when those requisites are met. To make PCR alignment possible, other actions must be pushed forward in parallel. More public data are needed to enable further PCR development. A global repository where all published PCRs are indexed is needed to help parties identify existing PCRs prior to PCR development. Central notification mechanisms are also needed to provide public notice of PCR related activities to prevent duplication of efforts and enable participation from interested parties globally. Lastly, cooperation among a much broader range of stakeholders is required to develop a unified PCR, which is a single PCR for a product category that conforms to multiple product standards and/or is applicable to different geographies. If PCR development occurs systematically, PCR coverage will be more complete with

increased consistency among and between product categories. It was highlighted that in the future claims are increasingly likely to be present in digital forms and may include dynamic content; PCRs need to adapt and permit these forms of claims to remain relevant to the needs of the end-users and trends in communication media.

4 Next steps

The development of the Guidance and creation of the PCR Guidance Development Initiative are steps towards the larger goal of ensuring that a robust system of PCRs, applicable to a multitude of standards and geographies, are developed and used to make credible claims in the marketplace, in a resource-efficient manner.

Visibility and outreach The Initiative has begun to reach out to potential users of the Guidance through online educational presentations and at regional and international meetings. An overview seminar was broadcast via the ACLCA webinar series in April 2013.[3] A roundtable to discuss implication of PCRs in Latin America was hosted at the CICLA 2013 conference in Mendoza, Argentina, at which the PCR Guidance was highlighted (Scarcini et al. 2012). The PCR Guidance was recently presented at the PEF Policy Conference in Berlin (Goedkoop et al. 2013)[4] and at the International Sustainable Systems and Technology conference in Cincinnati, OH, USA (Ingwersen and Subramanian 2013). Additional presentations and discussion fora are being planned for upcoming conferences in North America (LCA XIII Conference and 3rd International Congress on Sustainability Science & Engineering), Europe (avnir LCA Conference), and Asia (Indian Life Cycle Assessment and Management Conference 2013).

Improving the Guidance The participants of the Initiative understand they have published a first version of a document that will likely be revised to meet emerging needs and applications of PCRs in the future. The participants view the Guidance as an opportunity to streamline the PCR development process that will save them time, money, and resources. As a result, the participants feel that it is highly valuable to road test the Guidance in order to refine it. Two activities are expected to help provide feedback for future improvement: piloting the Guidance and the operation of a PCR forum. The Initiative has begun discussions with program operators and other interested parties about potential development of PCRs using the Guidance documents. An important aspect of the piloting process would involve case studies of PCR adaptation, the creation of a unified PCR, and the use of information modules in PCR development. There is a need for a communication platform that is a combination of online discussions and web-based and in-person meetings to share information and experience from case studies. In the process of developing the Guidance, through the creation of the Initiative, a community of interested parties was formed. It is our intention to keep this community actively engaged in discussions to improve PCRs (consistency, quality, system, etc.), identify and address unresolved issues, and bridge gaps. This forum will serve to receive feedback on the Guidance in a continual manner.

Advancing standards Given the insufficient specificity for creating PCRs in the multitude of product claim standards and their slow rate of revision, the Guidance seeks to fill the gap by supplementing the standards—this fulfills one of the primary goals of the Initiative. When product standards are opened up for revision, the Guidance will serve as a content source, thereby reducing cost, time, and resources required to update the standards.

5 Conclusions

The Guidance for Product Category Rule Development, the product of an informal international initiative, fills an important gap in the field of LCA-based claims. The Guidance functions as a bridge between multiple product claims standards and program rules while respecting differences in purpose and audience, and serves to reduce confusion in the PCR development process. Through provision of step-by-step requirements and recommendations for PCR development, the process of developing PCRs should be more straightforward, efficient, and robust. The Guidance further describes a process of adaptation or minimal revision of PCRs as well the use of flexible elements, and provides a common template for PCR development which should make PCRs more consistent and less duplicative. Further collaborative action is recommended to support and enable development and sharing of PCRs including the development of a global PCR registry and communication platform, greater provision of life cycle data, and pilot studies to test development of PCRs that can be applied to multiple regions and product standards.

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[3] http://www.lcacenter.org/webinars.aspx
[4] http://www.pcf-world-forum.org/events/pef-policy-conference/

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Disclaimer This article does not reflect the official opinion or policy of the US Environmental Protection Agency or any of the other organizations represented by participants in the Guidance for Product Category Rule Initiative.

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